Radiologic Case

An 80-Year-Old Man With Acute Abdominal Pain

LAURIE PATANELLA, *Philadelphia;* SUSAN DAVIES, *Chicago;* CARY J. STEGMAN, MD; *and*
JONATHAN M. LEVY, MD, *Scottsdale, Arizona*

A "Radiologic Case" is published in this format on a regular basis. Physicians interested in contributing to the series are encouraged to send their radiologic cases to the series' editor.

JONATHAN M. LEVY, MD
Series' Editor

An 80-year-old man presented with an acute onset of cramping upper abdominal pain, nausea, and vomiting. He had had no previous operations. On physical examination the abdomen was distended and nontender with hypoactive bowel sounds. A plain film of the abdomen was taken immediately (Figure 1) and another one 4 hours later (Figure 2).

What is the diagnosis?

What test would you do next?

SEE FOLLOWING PAGE
FOR DIAGNOSIS AND DISCUSSION

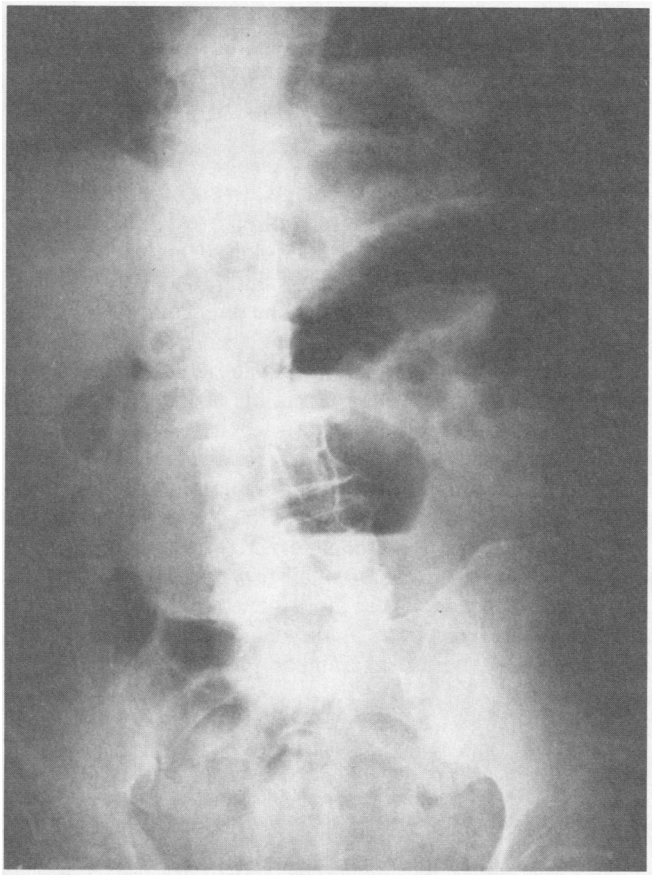

Figure 1.—An upright film of the abdomen taken on admission shows a dilated loop of small bowel in the left upper quadrant and gas and fecal material in the colon.

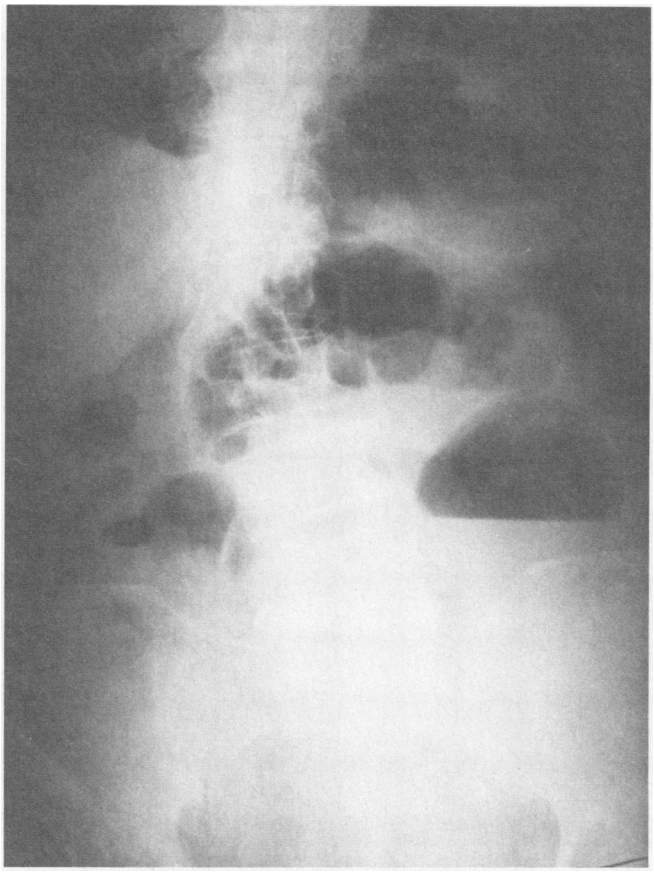

Figure 2.—A second upright film of the abdomen taken 4 hours later shows a change in the gas pattern in the distal bowel.

(Patanella L, Davies S, Stegman CJ, et al: An 80-year-old man with acute abdominal pain. West J Med 1989 Sep; 151:343-344)

Ms Patanella is a 4th-year medical student at Hahnemann University School of Medicine, Philadelphia, and Ms Davies is a 3rd-year medical student at Rush Medical College of Rush University, Chicago. From the Department of Diagnostic Radiology, Scottsdale Memorial Hospital, Scottsdale, Arizona (Drs Stegman and Levy).

Reprint requests to Jonathan M. Levy, MD, Department of Diagnostic Radiology, Scottsdale Memorial Hospital, 7400 E Osborn Rd, Scottsdale, AZ 85251.

DIAGNOSIS: Small bowel obstruction due to midgut volvulus

THE INITIAL PLAIN FILM of the abdomen (Figure 1) shows a single loop of dilated small bowel in the left upper quadrant. There is gas and fecal material in the colon. On the film taken four hours later (Figure 2), there is no significant change in the dilated loop, but the distal bowel gas pattern has changed. In adynamic ileus, both large and small bowel loops are usually dilated, and the gas pattern remains relatively stable over time. The findings, therefore, suggest an obstructing lesion in the proximal small bowel, but this is not an unequivocal picture. Other causes of proximal small bowel dilatation such as pancreatitis can produce the same changes. Because of this, an upper gastrointestinal tract examination with small bowel follow-through was done.

The upper gastrointestinal tract examination (Figure 3) shows an abrupt change in caliber in the proximal jejunum. The most common cause of this appearance is obstruction due to adhesions from a surgical procedure. Because this man had not had a previous operation, other causes of small bowel obstruction were considered. A large air-filled jejunal diverticulum was present just distal to the area of narrowing, and a review of the plain films showed that this had been present on all previous examinations. During surgery, the small bowel was seen twisted around the large diverticulum. The volvulus and diverticulum were resected, and the patient recovered.

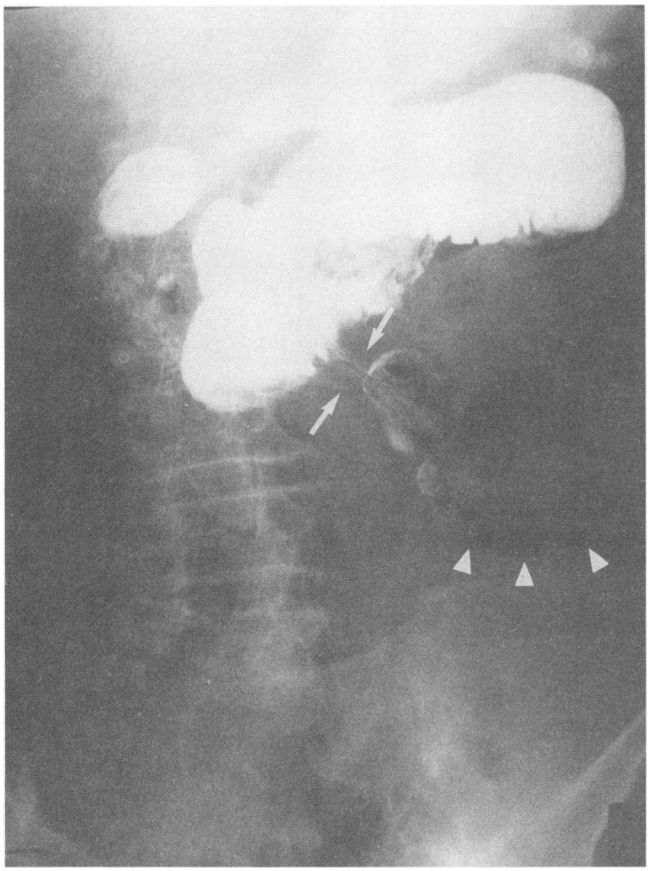

Figure 3.—An early film from a small bowel examination shows a narrowed segment of jejunum **(arrows)** and a large, air-containing diverticulum distal to the narrowing **(arrowheads).**

Volvulus is defined as a loop of intestine that has twisted 180 degrees or more on itself, resulting in obstruction of the loop. There is often associated compromise of the vascular supply to the involved loop. A small bowel volvulus can be primary (rare) or secondary to many other factors (usual). Predisposing conditions include malrotation, congenital bands, postoperative adhesions, tumor, intussusception, or internal hernia. It is important to diagnose the condition early because mortality rates as high as 67% have been reported with delay in treatment. Morbidity and mortality result from vascular compromise with ischemia and necrosis of the bowel.

Presenting symptoms of small bowel obstruction due to any cause include cramping and intermittent pain, vomiting, abdominal distension, and decreased bowel sounds. These signs are nonspecific and often lead to a delay in treatment when many other (nonsurgical) causes of abdominal pain are being considered.

Radiographic signs of small bowel obstruction are unequivocal in about a third of patients. In the other two thirds, barium examinations are often required to establish the diagnosis. In the past there has been some reluctance to use barium in patients with a possible small bowel obstruction, but this reluctance is unfounded. The only contraindications to small bowel barium studies are possible perforation and colonic obstruction. The use of a water-soluble medium is often less rewarding because mixing of the contrast with fluid in the bowel makes a diagnosis less certain.

A small bowel volvulus produces a characteristic whorl-like pattern on a computed tomographic scan, with mesenteric vessels in a circular pattern in the preaortic region. On angiography, the same spiral pattern may be seen, along with delayed or absent filling of small bowel vessels due to the vascular obstruction. These more intensive examinations are seldom needed, however, as the diagnosis can be made on plain films and a barium examination in the great majority of patients.

GENERAL REFERENCES

Bryk D: Strangulating obstruction of the bowel: A reevaluation of radiographic criteria. AJR 1978; 130:835-843

Duke JH, Yar MS: Primary small bowel volvulus. Arch Surg 1977; 112:685-688

Fisher JK: Computed tomographic diagnosis of volvulus in intestinal malrotation. Radiology 1981; 140:145-146

Han SY, Laws HL, Aldrete JS: How and when to use barium for diagnosis of small bowel obstruction. South Med J 1979; 72:1519-1523

Kadir S, Athanasoulis CA, Greenfield AJ: Intestinal volvulus: Angiographic findings. Radiology 1978; 128:595-599